UKRAINE - Energy Guide

I. Statistical Information

Primary Energy Consumption

2001	Mtoe (*)	Percent, %
Coal	15.3	23.0
Petroleum	12.1	18.0
Natural Gas	27.5	41.0
Hydro	1.6	2.4
Nuclear	10.3	15.3
Renewable	0.2	0.3
TOTAL	**67.0**	**100.0**

** Million tons of oil equivalent.*
Sources of information – State Committee on Energy Saving; Fuel and Energy Complex of Ukraine, A.K.Shydlovsky, M.P.Kovalko, Kyiv 2001.

II. Evaluation of Sector

Electrical Power Systems, Oil and Gas Field Machinery and Services and Renewable Energy Equipment

A) On a scale of 1 (low) to 5 (high), evaluate the priority given by the host government to energy development: 5

B) On a scale of 1 (low) to 5 (high), evaluate country's receptivity to U.S. products & services: 4

C) On a scale of 1 (heavy) to 5 (little), evaluate competition for U.S. exporters from local domestic suppliers: 3

D) On a scale of 1 (heavy) to 5 (little), evaluate competition for U.S. exporters from third-country suppliers: 4

E) On a scale of 1 (severe) to 5 (little), evaluate overall effect of trade barriers on U.S. exports of products and services: 2

Note: This is an FCS Kiev estimate ranking.

III. Narrative Information

Privatization in the Electric Power Sector

Privatization in the electric power sector of Ukraine is underway since late 1997. Ukrainian legislation provides that thermal power generation companies and regional power distribution companies must be privatized. According to the National Electricity Regulatory Commission and Ukraine's antimonopoly legislation, a single company can not own more than 15 % of Ukrainian power supply companies (i.e., more than 4 companies).
The following state-owned properties will not be privatized:
-- nuclear power plants (NPPs), operating hydro power stations (HPSs), and combined heat and power plants (CHPPs);
-- the regional electric grids with a voltage of 220 kV and higher;
-- the dispatching system of dispatcher and technological control of the united electric power system;
-- some major scientific research projects.

Concurrently, Ukrainian legislation does not prohibit construction of HPSs and CHPPs by independent developers.

As of August 2001, approximately 65% of Ukraine's power distribution system were privately held. As a result of privatization of regional power distribution companies that began in December 1997, by August 2001 controlling stakes in 13 of the 27 Ukrainian regional power distribution companies were privately owned. According to a government-approved privatization plan, 26% to 70% of shares in other 13 Ukrainian regional power distribution companies are supposed to be sold by the end of 2002. In the near future, the government does not intend to sell its stake in Kievenergo power generation and distribution company, the largest of regional power distribution companies. Winners of the privatization tenders gained the right to manage state-owned shares in power companies. The stock distribution plans of all 27 power distribution companies provided that the state retains 25% of the authorized fund plus one share. Thus, according to the plan, upon completion of privatization of regional power distribution companies, seventy-five percent of the power companies would be privately held, with the state holding a minority interest.

In the beginning of 2001 the government promised the investors to increase tariffs for privatized power distribution companies to provide for their profitability. Most private owners of the regional power distribution companies collect 100% of electricity payments in their regions, and are pushing the government to increase electricity tariffs (wholesale.) According to the National Electricity Regulatory Commission (NERC), the electricity tariffs paid by the population cover only 80% of its real cost. Analysts predict that by the end of 2002 the tariffs may increase to 3 cents per kW/h. Currently, retail price for households is $0.018 - $0.027 per kWh (less in rural and more in city areas); average wholesale tariff is $0.022 per kWh. The average tariff for industrial consumers is $0.034 per kWh. Non-industrial commercial consumers pay average $0.043 per kWh.

In 1997, the National Electricity Regulatory Commission (NERC) was formally given exclusive right to set tariffs for electricity and prices for transporting electricity within regional power distribution companies' local networks. All suppliers are required to purchase electricity at a single wholesale tariff. However, the NERC reserves the right to regulate

retail tariffs and tariffs for electricity sold by power generating companies.

As of August 2001, approximately 20% of the stock in four Ukrainian thermal power generation companies (TPGC) were privately held. According to the government-approved privatization program, the state would retain a 50% plus one share in each TPGC for five years; 26% in Dniproenergo and Centerenergo, 30% in Zakhidenergo and 35% in Donbasenergo will be offered on tenders in 2002-2003 after the regional power distribution companies are privatized; the remainder of stocks in TPGC will be sold to employees under preferential terms and traded on the stock exchange.

Overview of the Oil & Gas Sector and its Privatization Status

There are over 250 state and private companies working in the oil and gas market of Ukraine. The Ukrainian oil and gas industry is sub-divided into specialized firms: crude oil and natural gas producers, natural gas and crude oil/petroleum transport companies, and refineries and retail traders. The first two categories are under state control and completely monopolized. Oil refineries and petroleum retail trade companies have been actively undergoing privatization in 1999-2000. Five of the six Ukrainian oil refineries are currently controlled by private shareholders. Petroleum trading, both wholesale and retail, is a free self-regulating market. There are three major oil terminals in Ukraine: Odessa, Yuzhny (under construction) and Feodosia. The Odessa oil terminal, which has an annual capacity of 20 million tons of crude oil, accounts for most of the crude oil and petroleum products transshipped in Ukraine. The system of storage and distribution of petroleum also includes Ukrnaftoproduct, uniting 36 regional companies that buy, store, and sell petroleum products, and Eximnaftoproduct, transshipping Russian oil through its terminals in Odessa. Ukrnaftoproduct is now controlled by private shareholders. Of the 53 regional gas distribution companies operating in Ukraine, the state (through Naftogaz) retains controlling interest in 19 companies.

Naftogaz of Ukraine (Naftogaz), a national holding company, and its subsidiaries control the domestic natural gas and crude oil extraction industry, and over 60% of the gas trading market. Naftogaz's subsidiary Ukrgazvydobuvannya, and subordinate companies Ukrnafta and Chornomornaftogaz, produce 97% of domestic natural gas and 96% of domestic crude oil and condensate. Chornomornaftogaz extracts oil and gas in Crimea on the Black and Azov Sea shelves, while Ukrgazvydobuvannia and Ukrnafta operate on land. Ukrnafta itself, a 50% state-owned company managed by Naftogaz, is the largest oil producer in Ukraine (94% of domestic oil production.) Despite the high level of state control, there is a number of successfully operating companies with foreign investments in the oil and gas extraction. They are small foreign companies working in joint ventures or under joint activity agreements with Ukrnafta or with the enterprises subordinate to the Geology Committee of Ukraine. It is hoped that the Law on Production Sharing Agreements (adopted in the fall of 1999) and the Oil & Gas Law (adopted in August 2001) would provide for increasing investments in the oil and gas extraction.

Ukraine has approximately 35,600 kilometers of gas pipelines. Yearly transportation capacity for the system is 290 billion cubic meters; the transportation capacity toward South Russia, Belarus, Moldova, Romania, Hungary, Slovakia, and Poland is approximately 170 billion cubic meters annually. Naftogaz also operates underground gas storage reservoirs with a total capacity of 32 billion cubic meters. Major companies of crude oil transportation are

Naftogaz-subordinate Druzhba Pipeline company and Prydniprovsky Main Pipeline company that in total transport about 68 million tons of crude oil annually, operating at about 60% capacity. Druzhba Pipeline delivers crude oil to two refineries in Western Ukraine, and transits Russian oil to Europe; Prydniprovsky Main Pipeline delivers crude oil to the refineries in the central, eastern and southern Ukraine, as well as delivers Russian oil exports to the terminals at Odessa, Ukraine, and Novorossiysk (Russia.) Naftogaz owns all oil and gas transportation and distribution systems, and most of the oil and gas storage facilities in Ukraine. It owns the main oil and gas pipelines and facilities, the main oil and gas storage facilities, and means of transport. According to current Ukrainian legislation, these facilities are not available for privatization; however, in the future the government intends to privatize portions of Naftogaz.

There are six oil refineries in Ukraine, with total annual refinery capacity of 53 million tons: Lysychansk LINOS in eastern Ukraine (owned by Tiumen Oil Company TNK, Russia), Kremenchuk NefteOrgSintez in central Ukraine (owned by Ukrainian government), Kherson Refinery in southern Ukraine (owned by Kazakhoil, Kazakhstan), Odessa Refinery in southern Ukraine (owned by Lukoil, Russia), Halychyna (controlled by Halychyna Economic Union, Ukraine) and Naftokhimik Prykarpattia (controlled by Wattford Petroleum Ukraine Holding, Ukraine-UK) in western Ukraine. There are about ten plants in Ukraine producing lubricants and motor oils. One of them, Azmol, is 100 % state-owned, others are privately controlled, including two companies with U.S. investments, Petra Ltd. and OmniSphere Trade. BP-Amoco, Exxon-Mobil and Shell are operating on the motor oil and lubricant market and have representative offices in Ukraine.

There are five gas-processing plants (GPPs) in Ukraine. Unlike oil refineries, Ukrainian GPPs are not independent entities. GPPs are part of larger oil/gas producers (or their regional branches) - three of them (Hnydytsevsky, Kachanivsky, and Dolynsky) are incorporated into Ukrnafta state-controlled company; two of them (Shebelinsky and Seleschensky) are in the Ukrgazvydobuvannia/Naftogaz of Ukraine structure. GPPs are not significant in the motor fuel market due to a low output capacity. Altogether Ukrainian GPPs and privately owned small gas processing units produce only about 1.2 million tons per year. GPPs are involved in the purification of light crude oil, processing of petroleum gas, and the production of LPG (propane-butane) and some motor fuel.

Electrical Power Industry and Generation/Transmission Equipment (ELP)

The Ministry of Fuel and Energy (MFE) is overseeing the electric power industry and the oil and gas industry. The MFE currently has three major departments handling respectively oil and gas industry, nuclear energy, and traditional energy (thermal and hydro). The MFE functions are focused more on the policy and economic issues of power and oil/gas industries, while all commercial issues are transferred under direct authority of energy companies.

Ukraine's seven power generating companies supply electricity to the national grid. Four thermal power generating companies Dniproenergo, Donbasenergo, Zakhidenergo and Tsenterenergo, unite 14 large thermal power plants (TPPs). Two hydro power generating companies, Dniprohydroenergo and Dnisterhydroenergo, comprise a cascade of six hydro power plants (HPPs) and one hydroelectric pumping storage power station (HPSPS) located along the Dnipro River, and one HPP located on the Dnister River. Energoatom national

nuclear power generation company unites four Ukrainian nuclear power plants (NPPs): Khmelnytsky, Zaporizhia, Rivne and South Ukraine plants (in December of 2000, Ukraine has shut down its fifth nuclear power plant, Chornobyl NPP.) 27 Ukraine's power distribution companies, 13 of which are now privately controlled, receive electric power through the wholesale market ("Energomarket") at the wholesale tariff from the generating companies. The retail market for power energy consists of the direct consumers of power energy.

The Ukrenergo National Energy Company handles dispatching and transporting the electric power in the grid. Ukrenergo's subsidiary, the National Dispatch Center (NDC), which includes eight regional dispatch centers equipped with SCADA technology, controls the stability in the energy grid dispatching the queries among the generating companies. Electricity is first transported through the high-voltage central transmission lines (220 KV and higher) that belong to Ukrenergo National Energy Company, then through local middle- and low-voltage transmission lines that belong to the regional power distribution companies, to the consumers. The transit of electricity through central lines costs about $0.02 kW per hour. The average price for the transmission of the electricity through the local lines of regional power distribution companies is $0.01 per kWh. The main external interconnections are with Central Europe, Western Russia, Belarus, Romania, the Caucasus region, and the Volga region. Ukraine's geographical location is advantageous for electricity exports to neighboring countries, but its transmission system must be sufficiently strengthened to overcome bottle necking problems and capacity restraints.

The installed capacity/production of Ukraine's electric power stations subordinate to the Ministry of Energy and Fuel is as follows:

2000	**Capacity, mln kW**	**% of Total Capacity**	**Production, bln kWh**	**% of Total Production**
Thermal (incl.cogeneration)	34.4	66.2	82.0	48.0
Hydro	4.7	9.1	11.4	6.7
Nuclear	12.8	24.7	77.3	45.3
Total	**51.9**	**100.0**	**170.7**	**100.0**

The major consumers of electricity are:

2000	**Consumption (net), bln kWh**	**% of Total Consumption**
Industry, transport civil engineering	104.4	62.7
Population	28.6	17.2
Public services	21.2	12.7
Agriculture	12.4	7.4

Total	**166.6**	**100.0**

Outward power flows and losses in the grid constitute 2.7 billion kWh annually, or 1.58% of total production. Steel and non-ferrous metallurgy industries consume about 52% of Ukraine's energy.

The transmission system in Ukraine consists of an 800-kV DC line; a basic infrastructure of 750-kV, single circuit AC systems that overlay an extensive 330-kV (double and single circuit) network feeding into 220-kV/110-kV systems; and 500-kV and 400-kV AC systems. The extent of power transmission lines is as follows:

Voltage, kV	800	750	500 - 400	330	220	150	110	35	6-10	0.4	
Length, ths. Km	0.10	4.08	0.64	13.01	4.14	10.33	39.31	71.08	333.9	499.0	
Total length:											**975.59**

Quantity and capacity of substations and transformers are as follows:

Indicator	*Total*
Quantity of reduction substations 35-75/10(6) kV / their power transformers capacity, units / MVA	5,399 / 157,727
Quantity / capacity of substations 6-35/0.4 kV, units / MVA	201,867 / 43,027
Quantity of power transformers installed on reduction substations with capacity 3-750 kV, units	236,489

(Source: Ministry of Energy and Fuel)

Ukraine used to export electricity to some Eastern-European countries, namely Bulgaria, Romania, Hungary, the Czech Republic, Slovakia, and Poland, through the state company Ukrinterenergo. Burshtyn thermal power station's three units and a power unit at the Dobrotvir thermal power station generate the electricity exported to these countries. Both TPSs are owned by the Zakhidenergo power generating company. In 1997, 4.5 billion KWh of electricity, worth over $100 million was exported to Europe. In 1997-1999 Ukraine actually had been forced to import electricity because of a precipitous decline in electric power production. With about 50% of Ukraine's electricity generated by fossil fuels, this production decline has been exacerbated by problems in obtaining natural gas, oil, and coal supplies. Ukraine imports 80% of gas it consumes (from Russia and Turkmenistan), and about 20% of coal (from Russia and Poland.) Russia is supplying all nuclear fuel rods for Ukraine's 14 operating nuclear reactors. This puts Ukraine in the position of relying on one country, Russia, for most of its imported fuel needs. As to the capacity of the Ukrainian grid

system to export electricity to European countries, in the FSU (in 1980s or so) a few power lines were built: 750 kV power lines to Poland and Hungary; 330-500 kV lines to Slovakia, Romania, Hungary and Poland. Now Ukraine also has an 800 kV power line (direct current) to export electricity to Europe.

Ukraine's 17 major thermal-fired plants have 104 power units with a generating set of a single capacity 150, 200, 300 and 800 MW. These are 14 thermal power stations (TPSs) and 3 major combined heat-and-power, or cogeneration plants (Kiev 5, Kiev 6 and Kharkiv 5). The unit-type stations make 73.2 percent of the total capacity of thermal power stations (TPS). Besides that, there are also 27 big combined heat and power plants (CHPP) related to the regional power distribution companies, with 4104 MW installed capacity (electric). Total capacity of both TPS and CHPP is 34.4 million kW, which is 66.2 percent of total installed capacity. Big industrial enterprises in different industrial branches have a couple dozen low capacity thermal-fired plants, so called block-stations with total capacity 2.6 million kW. But these block-stations belong to enterprises and are not in the structure of the Ministry of Fuel and Energy. The statistics on their capacity and production is not available. Ukraine's thermal power plants have obsolete equipment and technology, and lack modern pollution control equipment. The situation with equipment at the power plants is as follows:

	% of Total	**Installed Capacity, mln kW**
Equipment, operational: less than 30 years	52.0	16.6
from 30 to 40 years	47.0	15.1
more than 40 years	1.5	0.5

Ukraine's "National Power Energy Program Until the Year 2010", adopted in May 1996, provides for the rehabilitation of working thermal power stations to allow them to continue to be operational for the next 25 years. The Program also calls for technological improvements of the power stations to modernize them and make them more environmentally friendly. The combined-cycle gas turbine equipment, as well as most of the auxiliary equipment, must be improved to reach acceptable safety levels and good quality coal must be used to reduce environmental damage. Completion of some new hydropower utilities, such as Dnistrovska HPSPS, is also called for by the Program, as is reduced dependence on imported energy resources.

Extraction of coal in Ukraine in 1990, 2000-2001, million tons:

Indices	***1990***	***2000***	***2001****
Total coal extracted in Ukraine	*164.8*	*80.3*	*79.0*

(- Forecast figures)*

Ukraine imports about 20% of coal it consumes. Coal is imported in approximately equal amounts from Russia and Poland. Ukrainian coal is 15-20% more expensive than imported

coal of similar quality. The cost of its local production is as high as US$ 55 per ton.

As of early 1994, gas prices for residential gas consumers constituted about 15% of the real price of gas; coal used for residential consumption was priced at around 10% of its cost. Recent measures have been introduced to raise the price charged to residential gas and coal consumers towards costs of production. Neither gas nor district heating consumption, which was also heavily subsidized by the central or local government two years ago, was metered at the residential level. As subsidies are phased out, meters are being installed to enable better cost recovery for the energy utilities. This, in turn, should encourage energy conservation.

There are 14 operating nuclear units at the five Ukrainian NPPs, 11 of them have reactors of type VVER-1000 with a capacity of 1,000 MW each, and two units (#1,2 of Rivne NPP) have older VVER-440 design reactors with a capacity of 440 MW. Both reactor designs lack containment and other safety systems that meet international standards, and therefore, raise concerns about safe operation. Between 2010-2020, it will be necessary for Ukraine to close power units, which are currently operating but have already exceeded their lifetime. Taking into account that fact that construction of a VVER-1000 based power unit takes about 10-12 years, the construction of new facilities must be started now, otherwise Ukraine will have only five active power units at a time. These five are the recently installed unit #6 at Zaporizska NPP, and the yet to be completed units at the Khmelnytsky and Rivne NPPs. Construction of three new nuclear power generation units was started on Khmelnytsky NPP, Rivne NPP and South Ukraine NPP and suspended later due to lack of internal funds. Construction of Khmelnytsky and Rivne NPP units is expected to resume pending the EBRD loan approval and commitments by the other international financial institutions. The project total cost is estimated at US$ 1.48 billion. One of the major obligations Ukraine fulfilled for this project was the Chornobyl NPP closure in December 2000, and GOU still has to fulfill certain requirements for international financing approval. Open tenders are being held for procurement of various categories of equipment and services within the Chornobyl Shelter Implementation project (scheduled for completion in 2007) and two major decomissioning facilities construction projects, Spent Fuel Storage and Liquid Waste Processing (both scheduled for completion in 2003.) These projects are financed from the Chornobyl Shelter Fund and Nuclear Safety Account that accumulate about US$ 1 billion in grant funds, which are administered by the EBRD.

Best sales prospects for U.S. products are: electrical equipment: electrical motors for feeding pumps, portal cranes and conveyor belts, accumulator batteries, assorted bearings, circuit breakers, disconnectors, current and voltage transformers, support insulators, generating sets; boilers, boiler auxiliaries and materials: low and medium capacity boilers, tubular stacks for boilers, assorted valves, superheaters, spare parts for fans, piping for boilers, steam ejectors, metering pumps, nickel-steel tubing; turbines: steam turbines, gas turbines and turbine auxiliaries.

Market Size Data (in US$ millions):

	1999	**2000**	**2001***
A. Total Market Size	1500	1600	1700
B. Total Local Production	N/A	N/A	N/A
C. Total Exports	N/A	N/A	N/A
D. Total Imports	N/A	N/A	N/A
E. Imports from the U.S.	190	200	220

(Note: Reliable, complete, and accurate statistics on production, imports, and exports of goods are not available in Ukraine. Information contained in this table relies on sources that include government publications, opinions of industry participants, and unofficial U.S. Embassy estimates.
** - Forecast figures)*

Oil & Gas Industry and Equipment (OGM)

Energy resources	Ukraine's domestic supply of energy resources (% of total demand)
Total domestic energy resources including:	42-44
nuclear rods	0
coal	80
natural gas	21-24
crude oil	10-12

(Source: Fuel and Energy Complex of Ukraine in Figures and Facts, M.P. Kovalko, Kyiv, 2000.)

There are three petroliferous areas in Ukraine: Carpathian (in western Ukraine), Dnipro-Donetsky (in the east), and the Black Sea and the Crimean region (in the south). Ukraine's hydrocarbon resources are estimated at 7-8 billion tons of fuel equivalent. There are at least 300 potentially profitable oil and gas fields in Ukraine, of which more than 190 have been developed. The number of operational producing wells exceeds 4,400 units.

Supply and distribution of natural gas in Ukraine in 1999-2001, billion cubic meters:

Indices	**1999**	**2000**	**2001***
Gas supply for Ukraine, including:	**73.6**	**73.4**	**73.3**
Domestically extracted	18.2	18.1	18.0
Received as payment for Russian gas transit through Ukraine	26.2	24.6	25.2
Imported into Ukraine from various sources, including Russia and Turkmenistan	29.2	30.7	30.1
Ukraine's total demand for gas, including:	**73.6**	**73.4**	**73.3**
Electricity/heat generators	24.1	24.3	24.3
Industrial consumers	22.0	22.1	22.2
Private consumers	17.2	17.1	17.1
Gas compressor stations	7.9	7.7	7.6
State budget-funded entities	2.4	2.2	2.1

(Sources: Fuel and Energy Complex of Ukraine, A.K.Shydlovsky, M.P.Kovalko, Kyiv 2001; Fuel and Energy Complex of Ukraine in Figures and Facts, M.P. Kovalko, Kyiv 2000.
** - Forecast figures)*

Diversification of the fuel supply has been under discussion in Ukraine since the country became independent in 1991. Ukraine is highly dependent on Russian and Kazakh oil, and on

Russian and Turkmen gas supplies. Both Kazakh oil and Turkmen gas are transported through Russia.

As a step towards diversification of crude oil supply, the oil pipeline Odessa-Brody that is part of the Caspian oil transport route to Ukraine and further to Europe, was completed in August 2001. At the first stage of the project, the pipeline would have 14 million ton annual capacity. Ukraine plans to complete the 12-million ton capacity Yuzhny oil terminal, another significant part of the Caspian oil transport route, by the second half of 2002.

The present Ukrainian natural gas supply consists of gas imported from Russia and Turkmenistan (Russian Gasprom, Itera International Energy Company with US-Russian investment) and domestically extracted gas. Gasprom supplies roughly 30 billion cubic meters (cu m) of gas per year to Naftogas of Ukraine National Joint-Stock Company as Russian payment/toll for transporting its gas through Ukraine. About 19-25 billion cu m are supplied annually on a commercial basis to Naftogaz of Ukraine and to private Ukrainian companies. Itera transports Russian and Turkmen gas to the Ukrainian border. Domestic producers of natural gas are either selling to consumers directly, or selling at the gas auctions for cash. Naftogaz of Ukraine also sells gas at the gas auctions. The needs of the state budget-financed organizations and the populace of Ukraine are covered entirely by gas purchased directly from Naftogas of Ukraine -- the gas that Naftogaz receives in payment for transiting Russian gas through Ukraine.

Ukraine is a key transit route for Russian oil and gas exports to Europe. Russia's Gasprom transports over 120 billion cubic meters of natural gas annually through Ukraine, which is about 95% of Russian gas transit supplies to Europe and Turkey. To reduce this dependence, Russia announced plans to bypass Ukraine by increasing gas exports to Europe through Poland and Belarus.

Price for imported natural gas on the Ukrainian border is $50-$65 per 1,000 cubic meters; average price for domestically extracted gas sold on the gas auctions was until recently about $35 plus 20% VAT per 1,000 cubic meters; natural gas retail price for households is about $0.03 per cubic meter. Introducing auctions to sell natural gas, gas condensate, and petroleum products in Ukraine is one of the measures to overhaul the oil and gas sector, make fuel payment system more transparent and attract investments to Ukraine.

Supply of crude oil and condensate in Ukraine in 1999-2001, million tons:

Indices	**1999**	**2000**	**2001***
Domestically extracted crude and condensate	**3.8**	**3.6**	**3.5**
Total crude supplied to Ukrainian refineries, including:	**12.0**	**8.3**	**10.6**
From Ukraine	2.6	2.5	2.5
From Russia	7.8	3.9	6.0
From Kazakhstan	1.6	1.9	2.1

(Sources: Fuel and Energy Complex of Ukraine, A.K.Shydlovsky, M.P.Kovalko, Kyiv 2001; Fuel and Energy Complex of Ukraine in Figures and Facts, M.P. Kovalko, Kyiv 2000.
** - Forecast figures)*

In the pre-break-up of the USSR times, Ukraine had an abundance of subsidized oil and gas from Russia. Today, Ukraine's petroleum industry is underdeveloped, and it's equipment is outdated. There is very limited domestic manufacturing of oil and gas field machinery. Technology and equipment is years behind that of the United States. Ukraine does not have pumping equipment capable of producing below 6,000 feet, even though many of the fields are at depths of 10,000 to 15,000 feet. Stimulation technologies such as hydraulic fracturing and acid stimulation are not available in Ukraine. 3-D seismic has not been used on-shore, and drilling equipment is antiquated and has difficulties to drill below 15,000 feet. It might take two to three years to drill a well below 15,000 feet. Majority of undeveloped reserves and large part of developed reserves are below 15,000 feet and are difficult to exploit without outside financing and modern equipment. Drilling machinery has been imported mostly from Russia and Romania.

Ukraine has the second largest refining capacity in the Newly Independent States (NIS), with a potential of about 53 million tons per year at six refineries. However, their utilization is 40-60%. About 60% of petroleum products consumed in Ukraine are imported, mostly from Russia, Belarus, and Baltic countries. Most of the refineries date from before World War II, and are unsophisticated, with little modern technology to process crude oil into valuable light products such as gasoline, diesel fuel, aviation fuel, kerosene, and liquefied petroleum gas. In Ukrainian refineries, refined product yield - the ratio of light products to the total refined - is only 57% on average, versus a desired target of 75%. The companies that purchased three major Ukrainian refineries (Russian Lukoil at Odessa Refinery, Kazakhoil at Kherson Refinery, and Russian TNK [Tiumenskaya Neftianaya Kompania] at Lisychansk Refinery LINOS) are currently investing in upgrading their refineries and establishing the retail gasoline trading systems of gas filling stations and fuel storage capacities Ukraine-wide.

The Ukrainian government has made the development of the oil and gas sectors one of its top priorities. There are several projects that may offer potential purchases of U.S.-made equipment and services: Ukrainian refineries modification; exploration of the Azov-Black Sea shelves (after enforcement of the Law on Production Sharing Agreements (PSA) - in the fall of 1999 the Law on PSA, and in August 2001 the new Oil & Gas Law were adopted by the Ukrainian Parliament; they simplify the procedure of obtaining licenses for oil and gas exploration and extraction and provide for certain benefits for the investors); operating the 12 million tons capacity Pivdenny (Odessa) Oil Terminal and the 667-kilometer Pivdenny-Brody pipeline, which would be part of the Eurasian Oil Transport Corridor, a transit route for Caspian oil to reach Central Europe; and the rehabilitation of the 35,000-kilometer gas pipeline that delivers nearly 35% of Western Europe's natural gas.

The best prospects for U.S. companies include: pipeline construction equipment (compressors and pumps for pipeline applications; gas transmission systems; gas pipeline leaks control systems; gas pipe fittings and applications; welding machines, cranes, pipe-cleaning equipment, and line trend machines); advanced and highly efficient oil and gas exploration and drilling equipment and technologies (pontoons supported on columns, hoisting cranes, drilling rigs, bits, electric motors, winch rollers, rotary tables, sheds, hoisting blocks, monkey boards, crown blocks, gin holes, shackles, cutting, roller and diamond bits, casing sleeves, chemicals, stimulation technologies, modern 3-D seismic, particularly for offshore projects where Ukrainian technology is very limited); equipment for atmospheric-vacuum oil refining; modernization and increasing of hydro-cracking and catalytic cracking capacities; units for

catalytic transformation of distillates; industrial automation, control and monitoring systems for refineries, gas processing and petrochemical plants; desulfurization and quality control facilities; safety systems; fuel dispensers, fuel storage tanks, fuel level monitoring and accounting systems.

Market Size Data (in US$ millions):

	1999	**2000**	**2001***
A. Total Market Size	1120	1120	1140
B. Total Local Production	N/A	N/A	N/A
C. Total Exports	N/A	N/A	N/A
D. Total Imports	46	46	50
E. Imports from the U.S.	10	10	13

(Note: Reliable, complete, and accurate statistics on production, imports, and exports of goods are not available in Ukraine. Information contained in this table relies on sources that include government publications, opinions of industry participants, and unofficial U.S. Embassy estimates.
** - Forecast figures)*

Renewable Energy Equipment (REQ)

Renewable energy sources do not comprise a significant source of primary energy in Ukraine. Although the government considers renewables as a prospective sub-sector, development is hampered by limited financial resources. Cogeneration is the major renewable energy source currently in use in Ukraine. Most of the regional power distribution companies operate combined heat and power plants with a total installed capacity of 3.8 MW, which produce approximately 11.9 billion kWh of electric power and about 40 million Gcal of heat per year.

Hydro energy from small rivers and sea tides has good potential in Ukraine and the Ministry of Fuel and Energy is working on attracting funds for small hydropower projects. A pilot project for the construction of five hydro power stations, with total capacity of 180 MW, on the Tissa river channels in the Carpathian region has been developed by the Ukrhydroproyekt engineering institute. To facilitate the project a joint-stock company would be created, with participation of the non-state investors.

The Alternative Fuel Center has prepared nearly 20 construction projects for power generating units with a capacity of 25 to 30 MW each. These units are to be placed at the coal mines having an average coal extraction output of 250,000 to 300,000 tons annually. Production costs of thermal energy and electric power at such complexes will be four to five times less than the costs at the big existing thermal power plants, due to savings on fuel transportation and utilization of quality fuel. These new power generation units will burn coal bed methane, which could be extracted in Ukraine in the amount of approximately 21 billion cubic meters annually, while now it is just being wasted.

The program on renewable energy sources foresees also the use of energy regeneration from thermal waste and its extraction by pumps and binary energy equipment; extracting bio-gas from agricultural waste, food production, and factories; storage of electricity and heat; use of low pressure natural gas, unrefined gas, solid and burnable residential and industrial waste; and use of wind, solar and geothermal energy.

Much attention is being given to energy efficiency and energy saving. Due to poor control over the use of fuel and energy resources, Ukraine's energy efficiency is two to three times lower than that in other developed countries. Ukraine burns up to 70 million tons of fossil fuels for residential living - about 1.4 tons per person annually. Approximately, 30% of the water supplied to houses and public buildings is used inefficiently or simply wasted. Almost 40% of the total heating energy generated are lost in transportation from generator to consumer.

The Government of Ukraine has developed an energy conservation program to encourage energy savings through reorganization of existing resources and increasing the efficiency of existing technology. Experts believe this can mean a 30% reduction in the demand for fuel, and a corresponding saving of $4.7 billion annually.

In order to encourage energy saving, the Ukrainian government passed an Energy Saving Law, approved in February 1994 and enacted in July 1994. This law provides for a number of activities to be carried out to encourage and enable energy saving. In order to focus efforts on energy efficiency, the State Committee on Energy Conservation (SCEE) was established in 1995. Several energy efficiency projects with U.S. company involvement are underway. The projects involve system controls, gas meter production, installation of heat meters in public buildings, supplying energy-efficient technologies, and monitoring devices to measure and regulate the amount of electricity used by industrial equipment. A number of similar projects is under consideration by the SCEE.

The National Energy Program until the Year 2010 provides that the target for alternative power generation and heat production is about 10 percent of the total energy output. The Program anticipates to have 1980 MW of installed capacity at all Ukrainian wind power stations (WPS) by 2010. The GOU is considering the development of the wind power industry as a top priority. Presidential Decree #457/2000 of March 10 aimed on overcoming the crisis in the fuel and power sector, underlined as one of the important measures the development of wind power sub-sector, and further funding for the program to build WPS in Ukraine. As of the end of 1999, there were nine WPS operating in Ukraine as pilot-and-commercial facilities, with total installed capacity of 15 MW. Seven of the nine WPS are state owned, and the two are joint-stock companies (with private capital.) The largest Ukrainian WPS is Donuzlav WPS in Crimea that has over 50 wind power units USW 56-110 in operation, with capacity 107.5 kW each. Two more wind farms are now under design and/or construction. Practically all wind units currently operating in Ukraine are of two types: USW 56-100 and AB 250C. Total there is over 150 wind power units operating in Ukraine. Most of them are manufactured locally, mainly within military conversion program.

Among the best prospects for the U.S. companies are: energy conservation in the heat-exchange systems and furnaces, gas and heat metering systems for industrial, domestic and commercial use; rehabilitation and replacement of compressors for the gas transmission system; energy efficient central heating boilers and hydraulic turbines; coal quality control equipment; clean coal technologies; modern digital control systems; solar heating systems and solar batteries; second-hand low-capacity wind generators.

IV. Major Procurement or Private Projects

1) European Bank for Reconstruction and Development (EBRD) Projects:

Fuel Purchase Loan Facility
Seasonal working capital facility, in support of Ukraine's energy sector reforms, to help four government-owned generating companies to buy fuel oil. Approved October 3, signed October 6, 2000. Funds approved – US$ 107.5 million. Total investment – US$ 107.5 million.

Ista Center
Corporate loan and revolving capital facility to support the expansion of the company's battery production facility. Approved November 28, signed December 14, 2000. Funds approved – US$ 10.7 million. Total investment – US$ 13.1 million.

K2/R4 Completion Project
Loan to Energoatom for the completion and safety upgrade of two nuclear power plants, approved subject to conditions including the permanent closure of Chornobyl facility. Approved December 7, 2000. Funds approved – US$ 231.0 million. Total investment – US$ 1,591.0 million. Project contact:
Ministry of Fuel and Energy
Department of Nuclear Power
Mr. Nur Nigmatulin, Director
9/11 Arsenalna Street, Kyiv, Ukraine
Tel: (380-44) 462-0256, 294-4800
Fax: (380-44) 224-4021, 462-0561, 221-4394

UkrESCO Industrial Energy Efficiency Project
The state-owned Ukrainian Energy Saving Company (UkrESCO) that was established in May 1998, is investing in energy saving projects throughout Ukraine. EBRD has provided a loan of US$27.2 million for this project. For the projects planned for the supply of energy conservation equipment, UkrESCO will finance approximately US$30 million, each project cost would not exceed US$200,000. Project contact:
Mr. Vasyl Bogatyr, Director, UkrESCO
1 Ivana Honty Street, Kyiv 04112, Ukraine
Tel: (380-44) 455-5000, 458-0417/2652; Fax: (380-44) 458-4763

2) World Bank Projects:

<u>Projects Under Implementation</u>

Kiev District Heating Improvement Project
Amount: US$200 million
Board Date: May 21,1998
Effective Date: April 12, 1999
Closing Date: December 31, 2004

The project targets: (i) heat production capacity improvement, to alleviate the insufficient heat production capacity and better meet existing/ growing demand; (ii) DH rehab (transmission, distribution, and network improvements); (iii) automation and control; and (iv)

institutional support to project agencies.

Procurement contacts:
Mr. Victor Lysykh, Head of the Project Management Unit
Tel: (380-44) 254-2740/3531; Fax: (380-44) 254-3529
Mr. Volodymyr Montiyev, Deputy Project Manager
Tel: (380-44) 221-4202; tel/fax: 221-4709
Kievenergo joint-stock company
4 Kurganivska Street, Suite 302A
Kyiv 01014, Ukraine

Kiev Public Building Energy Efficiency Project
Amount: US$18.3 million
Board Date: January 27,2000
Effective Date: August 17, 2000
Closing Date: December 31, 2004

The project aims at improvement of energy efficiency in 1302 Kiev's public buildings and consists of the following main components: (i) Energy Efficiency Improvements in Buildings; (ii) Technical Audit and Design of the Retrofits; and (iii) Institutional Support: PIU, project management, public awareness campaign, training and equipment, social assistance support.

Procurement contact:
Kyiv City State Administration, Project Implementation Unit (PMU) for the Kyiv Public Building Energy Efficiency Project
Mr. Valeriy Sade, Deputy Head of the PMU
E-mail: sade@piu.kiev.ua
44 Bogdana Khmelnitskogo Street, Room 419-413, Kyiv, Ukraine
Tel./fax: (38 044) 234 54 10, 234 54 27, 531-9172, 531-9173, 531-9174
Office general e-mail: kiba@piu.kiev.ua

<u>Projects under Preparation</u>

Coal Sector Social Mitigation Project
Amount: US$100 million
Board Date: March 2001

The project will (i) compensate redundant miners and ease social tensions through the provision of statutory social benefits; (ii) establish efficient procedures for closing redundant and uneconomic mines and avoiding serious environmental impact; (iii) enable miners from mines that are to be closed to enter the regional labor market and find new permanent or temporary employment in non-mining sectors; and (iv) provide public information, auditing, training and technical assistance.

Project contact:
Mr. Mykola Krasko, Director of the State Department of Coal Industry
Ministry of Fuel and Energy of Ukraine
4 B. Khmelnitskoho Street, Kyiv 01008, Ukraine
Tel: (380-44) 226-2165; Fax (380-44) 228-2131

Sevastopol Heat Supply Improvement Project
Amount: US$28 million
Board Date: March 2001

The project aims (i) to increase efficiency, improve the reliability and service levels in the heating system in Sevastopol through introduction of decentralized mini-boilers in the areas of worst heating conditions and in key public buildings; and (ii) to promote sound cost recovery policies and practices and the commercialization and institutional development of newly established heat supply company Sevteploserviss.

Procurement contact:
Serhiy Doral, Project Manager, Sevteploserviss
3 L. Pavlichenko Street, Sevastopol 335000, Ukraine
Tel: (380-690) 52-5896; Fax (380-44) 52-0720

3) U.S. Trade Development Agency (TDA) Projects in Ukraine, as of June 2001:

Oil Pipeline—TDA has provided partial funding ($750,000) for a study on construction of an oil pipeline from Odessa to Brody. Gulf Interstate Engineering conducted the study.

Coal Recovery—TDA provided partial funding ($375,000) for a study on recovery of coal from slurry ponds. A consortium headed by Oxbow Coal and Carbon was conducting the study.

Power Plant Repowering—TDA provided partial funding ($400,000) for a study on conversion of a coal-fired power plant in Dnepropetrovsk to gas. NRG and Black & Veatch conducted the study.

Spent Fuel—TDA provided partial funding ($300,000) for a study on construction of a spent fuel facility at Zaporozhye Nuclear Power Plant. Duke Engineering & Services conducted the study.

Power Plant Systems—TDA provided partial funding ($200,000) for a study on coproduction of instrumentation systems for nuclear power plants. Westinghouse Electric conducted the study.

District Heating—TDA provided funding ($626,000) for a study on upgrading the Kyiv district heating system. Joseph Technology conducted the study.

Energy Conservation—TDA provided partial funding ($400,000) for a study on energy conservation investments at three facilities. Honeywell Inc. conducted the study.

4) USAID-Funded Projects:

USAID has helped develop a multi-faceted energy program for Ukraine which focuses on: 1) power sector restructuring, which has helped transform the power sector from a vertically integrated monopoly to a market system with regulatory oversight of tariffs and licensing, and power distribution based on financial bids; 2) assisting the government of Ukraine to

privatize the power sector, starting with 27 distribution companies; 3) development of a coal bed methane industry; 4) improving energy production and conservation by introducing new technologies, management techniques and applying market principles; and 5) indirectly supporting Ukraine's nuclear safety performance and improving nuclear sector regulation and inspection.

5) Investment Projects Promoted by the Government of Ukraine

Dnisterhydroenergo hydro power generating company plans to complete the three units for the Dnister Hydro Pump Storage Station to improve control of system frequency, voltages and power dispatch. The total project cost is estimated at $480 million; $260 million (60%) will be required to launch into operation the first stage of the station with a capacity of 970 MW. Partial financing from the state budget will be provided.

Project contacts:

1. Yaroslav Vavzhenchuk, Chairman of the Board, Dnisterhydroenergo
   Sokyriansk District, Novodnistrovsk
   Chernivetsky Region 275025, Ukraine
   Tel: (380-3741) 3-2033: Fax (380-3741) 3-1562

2. INEKO Management Company (investments, securities, privatization, consulting)
   Mr. Yuriy Kubrushko, Business Development Director
   29 Gorgoho Street, Kyiv 01033, Ukraine
   Tel: (380-44) 227-8677/8577; Fax: (380-44) 220-5632
   E-mail: kubrushko@imepower.com
   Http://www.imepower.com

The Ministry of Energy of Ukraine has developed 12 projects, including rehabilitation of nine existing thermal power stations, Sympheropol Combined Heat & Power Plant, Tashlykska Hydro Pumping Storage Power Station, construction of new hydropower generation capacities on the river Tissa in Zakarpattia Region.

Project contact:
Mykola Borysov, Deputy Head of Credits and Investments, Ministry of Energy of Ukraine
30 Khreschatyk Street, Kyiv 252601, Ukraine
Tel/Fax: (380-44) 228-5993

V. Major Trade Events/Fairs

October 29-November 1, 2001 OIL & GAS

- equipment and technologies for oil and gas production, processing, storage, transportation and distribution; equipment for energy metering and savings, products for risk management in the oil and gas industry

Location: Ukraine, Kyiv, Pushkinsky Park, ACCO International Exhibition Center
Organizer: ACCO International
40-B Peremohy Ave., Kiev 04054, Ukraine
Tel/fax: (380-44) 458-4621/22/23/24
Mr. Bogdan Khrystevych, Oil & Gas Exhibition Manager
E-mail: bogdan@acco.kiev.ua, admin@acco.kiev.ua

Http://www.acco.kiev.ua

April 17-20, 2002 ELCOM Ukraine
- electrical industrial equipment and technology; electric power systems, drives and standard products; electrical engineering; electronics, automation, lighting equipment; measurement and control devices and systems
Location: Ukraine, Kyiv, National Exhibition Center
Organizer: Euroindex
P.O. Box 726, Kyiv 01032, Ukraine
56, Peremohy Prospect, Kyiv 03058, Ukraine
Mr. Valeriy Pekar, President
Tel/fax: (380-44) 461-9300/01/02/03
E-mail: pekar@eindex.kiev.ua
Http://www.euroindex.com.ua

May 13-14, 2002 AQUA-THERM Kiev International
- heating, ventilation, air-conditioning, sanitary systems and technologies, environment protection technologies
Location: Ukraine, Kiev, Palace of Sports
Organizer: FINMARK Fairs and Exhibitions
Office in Kiev: 45 Chervinoarmiyska Street, Office 32, Kyiv 03150, Ukraine
Tel/fax: (380-44) 227-2782
E-mail: luciano@ukrnet.net, Mr. Luciano Zakkeroni, Country Representative
Head office in Italy: Fin-Mark Srl – Via Corticella 205, 40128 Bologna, Italy
Tel: (39-051) 419-9911; Fax: (39-051) 419-9923
E-mail: info@fin-mark.com
Http://www.fin-mark.com

May 21-24, 2002 ENERGY FORUM Ukraine
- electric power systems, industrial electrical equipment; oil and gas equipment and services; energy conservation engineering, equipment and services; alternative sources of energy, registration and control devices; industrial and household energy efficiency appliances
Location: Ukraine, Kyiv, Palace of Sports
Organizer: Ukrenergozberezhennia JSC
Mr. Serhiy Denysiuk, Director General
1 Gonty Street, Box #33, Kyiv 04112, Ukraine
Tel/fax: (380-44) 458-3662
E-mail: uez@elan-ua.net

VI. Country's Methods of Procurement

Large government procurements represent export opportunities for U.S. companies. However, U.S. firms should keep two things in mind. First, the Ukrainian government lacks internal resources for large purchases, and companies are advised to track the tender announcements of the World Bank and the European Bank for Reconstruction and Development (EBRD), which have initiated numerous programs to assist Ukraine in its transition to a market economy. Second, reaching the "point of decision" in the Ukrainian bureaucracy can be a daunting task.

Major international financial institutions, such as the World Bank and the EBRD, have organized tenders for the procurement of goods and services to be used by Ukrainian government agencies. The presence of a Western tender organizer often makes selling to the government a more transparent practice, providing for published deadlines, proposal criteria, and more importantly, Western oversight in making final procurement decisions.

Government procurements are conducted on the basis of the Law "On Procurement of Goods, Works and Services Using State Funds" #1490-3 dated February 22, 2000. Under this law, all government procurements of goods and services above EUR 40,000 and procurements of works above EUR 40,000 are conducted through one of the following tender procedures: open tenders, or open tenders with prequalification. Open international tenders must be conducted when the procurement is financed by an entity not resident in Ukraine. The information on government procurements is publicized in the official GOU magazine "Visnyk Derzhavnykh Zakupivel" (State Procurement Bulletin) published by the Ministry of Economy of Ukraine. American company representatives in Ukraine can arrange subscription for this magazine (in Ukrainian or in Russian) at the Ministry of Economy at the following contacts:
Tel: (380-44) 293-9415/3296/1166
Fax: (380-44) 552-4365
E-mail: vdztender@me.gov.ua
Large procurements are also announced on the Internet web page of the Ministry of Economy at
www.me.gov.ua.

VII. Means of Financing Procurement

Financing is subject to contract negotiations. Among the forms of financing are enterprise or company internally generated funds; domestic borrowing; foreign borrowing; domestic equity investments; domestic grants from the budget; grants from foreign aid agencies. Among foreign donors financing energy projects in Ukraine are the World Bank, the European Bank for Reconstruction and Development, the U.S. Agency for International Development (USAID), the U.S. Trade Development Agency (financing project feasibility studies), and the European Union's TACIS. The aid package has concentrated on the reorganization of the energy sector; efficiency improvements of the production process in the oil, gas and coal sectors; and also in energy savings. Since 1996, Ukraine has become the third largest recipient of US aid (after Israel and Egypt).

VIII. Points of Contact

A) American Embassy:
U.S. Commercial Service
Ms. Victoria Sergeeva, Commercial Specialist
4 Hlybochytska Street, Artyom Center, 4th Floor, Kyiv 04050, Ukraine
Tel: (380-44) 490-4336
E-mail: Victoria.Sergeeva@mail.doc.gov

U.S. Department of Energy
Mr. Riaz Awan, Energy Attaché

10 Yuriya Kotsiubinskoho Street, Kyiv 01901, Ukraine
Tel: (380-44) 490-4485; Fax: (380-44) 244-7350

B) Host Government:

Ministry of Fuel and Energy
Mr. Stanislav Stashevskiy, Minister
4 Bohdana Khmelnytskoho Street, Kyiv 01001, Ukraine
Tel: (380-44) 226-2273/ 228-0372
Fax: (380-44) 228-2131

Department of Nuclear Power
Mr. Nur Nigmatullin, Director
9/11 Arsenalna Street, Kyiv, Ukraine
Tel: (380-44) 462-0256, 294-4800
Fax: (380-44) 224-4021, 462-0561, 221-4394

Department of Oil, Gas and Oil Refining
Mr. Oleksandr Sverdlov, Director
60 Sichovykh Striltsiv Street, Kyiv 04050, Ukraine
Tel: (380-44) 226-3241/3482, 246-8101
Fax: (380-44) 211-3010
Department of Coal
Mr. Mykola Krasko, Director
4, B.Khmelnytskoho Street, Kyiv 01008, Ukraine
Tel: (380-44) 226-2165
Fax: (380-44) 228-2131

Ministry of Environment and Natural Resources
Mr. Serhiy Kurykin, Minister
5, Khreshchatyk Street, Kyiv 01601, Ukraine
Tel: (380-44) 226-2428, 228-0644
Fax: (380-44) 229-8383

"Naftogas of Ukraine" National Joint-Stock Company
Mr. Vadym Kopylov, Chairman
6 B Khmelnitskoho Street, Kyiv 01001, Ukraine
Tel/Fax: (380-44) 229-4579
Olexiy Sheberstov, Minister, Ministry of Energy of Ukraine
30 Khreschatyk Street, Kyiv 252601, Ukraine
Tel:(380-44) 226-2025; Fax: (380-44) 224-4021

C) Major International Donor Organizations in Ukraine

World Bank Field Office (IBRD)
2 Lysenka Street, Kyiv 01032, Ukraine
Tel: (380-44) 490-6672
Fax: (380-44) 490-6670

http://www.worldbank.org

European Bank for Reconstruction and Development (EBRD)
27/23 Sofiivska Street, Kyiv 01001, Ukraine
Tel: (380-44) 464-0132; Fax: (380-44) 464-0813
E-mail: Kiev@kev.ebrd.com
http://www.ebrd.com

U.S. Agency for International Development (USAID)
19 Nyzhniy Val Street, Kyiv 04071, Ukraine
Tel: (380-44) 462-5678, 490-4047/4210/4274; Fax: (380-44) 462-5834
Http://www.usaid.kiev.ua

IX. Additional Sources of Information on the Energy Sector

INEKO Management Company (investments, securities, privatization, consulting)
Mr. Yuriy Kubrushko, Business Development Director
29 Gorgoho Street, Kyiv 01033, Ukraine
Tel: (380-44) 227-8677/8577; Fax: (380-44) 220-5632
E-mail: kubrushko@imepower.com
Http://www.imepower.com

Ukrainian Petroleum & Energy Consultants (UPECO)
Mr. Konstantin Borodin, Director General
18/14 B.Khvoyki Street, Offices ##304, 305, Kyiv 04080, Ukraine
Tel: (380-44) 201-4991/92/93/94; Fax: (380-44) 201-4995
E-mail: borodin@upeco.kiev.ua
Http://www.upeco.com

Energobusiness (energy sector information center)
Mr. Olexiy Cherniavsky, Director
15 Bozhenko Street, Build.7, Office #416, Kyiv 03150, Ukraine
Tel: (380-44) 261-5406; Tel/fax: (380-44) 261-5650, 220-9036
E-mail: energo@vikno.kiev.ua